

WHAT IS CLAIMED IS:

1. A trans-reflective liquid crystal display device comprising:
 - a plurality of data and gate lines defining a plurality of pixels, the pixels having a reflection region and a transmission region;
 - a timing controller that receives, converts, and outputs image data;
 - a switching unit that determines the output signal of the timing controller according to a transmission mode or reflection mode;
 - a gate driver that receives a gate signal from the timing controller;
 - a data driver that receives a data signal from the timing controller;
 - a liquid crystal display panel with a TFT array substrate and a color filter substrate, the liquid crystal display panel displaying the image according to a gate pulse and a data voltage applied by the gate driver and the data driver;
 - a sequential backlight including red, green, and blue lamps wherein, the backlight is turned on in a transmission mode to sequentially transmit the light into the transmission region and is turned off in a reflection mode.
2. The trans-reflective liquid crystal display device of claim 1, wherein the color filter substrate includes a color filter formed in the reflection region.

3. The trans-reflective liquid crystal display device of claim 1, further comprising a backlight controller connected to the sequential backlight to control the timing of the light emissions in the transmission mode.

4. The trans-reflective liquid crystal display device of claim 1, wherein the data driver includes a MUX circuit shorting three adjacent data lines, the MUX circuit being turned on in the transmission mode and turned off in the reflection mode.

5. The trans-reflective liquid crystal display device of claim 1, wherein the lamp backlight includes a light emitting diode.

6. The trans-reflective liquid crystal display device of claim 1, wherein the cell gap between in the transmission region is twice that in the reflection region.

7. The transreflective liquid crystal display device of claim 1, wherein the timing controller divides one frame of display data into three sub-frames.

8. A method of driving a trans-reflective liquid crystal display device having a plurality of pixels defined by a plurality of data and gate lines arranged in the transverse and longitudinal directions, the pixels having a transmission region and a reflection region, the method comprising the steps of:

supplying image data to a timing controller;

selecting a transmission mode or a reflection mode by a switching unit;

converting and outputting the image data by the timing controller ;
transmitting external light through a color layer to display the color image in the reflection mode and operating a backlight having red, green, and blue lights to display the color image in the transmission mode, the backlight sequentially emitting light having red, green, and blue colors in the transmission region of the pixel.

9. The method of claim 8, further comprising the steps of:

dividing one frame into three sub-frames to transmit sequentially light having red, green, and blue colors in the transmission mode; and applying the same data voltage to the adjacent three pixels every sub frame in the transmission mode.

10. The method of claim 8, further comprising applying independent data voltages to each pixel in the reflection mode.

11. A liquid crystal display device, comprising:

a liquid crystal panel having a plurality of pixels defined by a plurality of gate and data lines arranged on a first substrate, the pixels having a reflection region and a transmission region;

a switching device in each pixel;

a reflective electrode in the reflection region to reflect light incident from outside the liquid crystal panel;

a backlight including red, green, and blue lamps, the lamps sequentially emitting light in the transmission region; and

a color layer in the reflection region.

12. The liquid crystal display device of claim 11, wherein the lamp is a light emitting diode.

13. The liquid crystal display device of claim 11, wherein the liquid crystal panel includes:

a second substrate; and

a liquid crystal layer between the first and second substrate.

14. The liquid crystal display device of claim 11, wherein the switching device includes a thin film transistor.

15. The liquid crystal display device of claim 11, wherein the cell gap between the substrates in the transmission region is twice the cell gap in the reflection region.

16. The liquid crystal display device of claim 11, further comprising a timing controller that receives, converts, and outputs image data.

17. The liquid crystal display device of claim 16, further comprising a switching unit that determines the output signal of the timing controller according to a transmission mode or a reflection mode.

18. The liquid crystal display device of claim 17, further comprising a backlight controller that controls the backlight based upon the output of the timing controller.

19. The liquid crystal display device of claim 18, further comprising a gate driver connected to the gate lines and a data driver connected to the data lines.

20. The liquid crystal display device of claim 19, further comprising a MUX circuit shorting out three adjacent data lines, wherein the MUX circuit is turned on in a transmission mode and turned off in a reflection mode.